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Obituary.

HENRY WALTER BATES, F.R.S.

BY

FREDERICK BATES, ESQ.,

BARON DE SANTA ANNA NERY,

SIR JOSEPH D. HOOKER, K.C.S.I., C.B., F.R.S.,

W. L. DISTANT, ESQ.,

EDWARD CLODD, ESQ.,

CLEMENTS R. MARKHAM, ESQ., C.B., F.R.S., AND

FRANCIS GALTON, ESQ., F.R.S.

With Portrait.

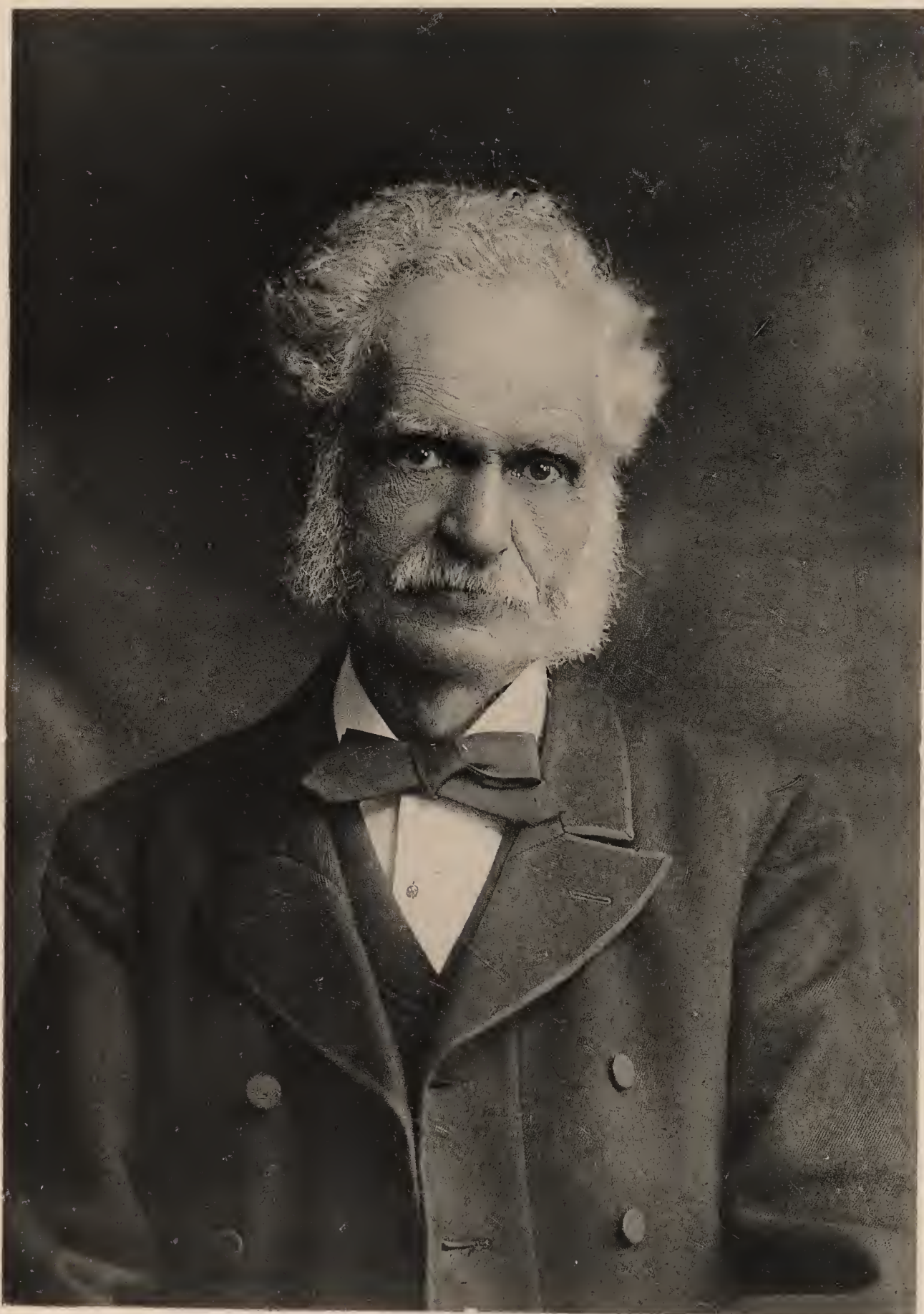
*From 'Proceedings of the Royal Geographical Society and Monthly
Record of Geography,' April 1892.*

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HENRY WALTER BATES, F.R.S.

From a Photograph by J. Thomson, 1892.

Obituary.

HENRY WALTER BATES, F.R.S.

IN the March number of the 'Proceedings' it was our sad duty to announce the death of Mr. H. W. Bates, who had filled the office of Assistant Secretary to the Society for twenty-seven years. Mr. Bates, it is well known, returned from South America with a constitution enfeebled by the hardships he underwent in the interests of science, during his eleven years' work on the Amazons. He had, in consequence, always to be careful, and so husbanded his strength that he was rarely absent from duty through illness. In the summer of last year his sufferings became more acute than usual. Notwithstanding all the measures that were taken he got weaker as the year advanced, and those who were in the habit of seeing him noticed a great change in his appearance. About the beginning of February he was attacked by influenza, complicated with bronchitis, which his reduced strength was not able to resist; he succumbed on the morning of February 16th, at the age of 67 years.

Bates was born at Leicester on February 8th, 1825, the son of a manufacturer of that town, and he was intended for a business career. He was a man of many sides and many sympathies. In order to do justice to his character and work in these pages assistance has been sought from various quarters. Mr. Frederick Bates has kindly written the following interesting sketch of his brother's school-days and early youth:—

Almost my earliest recollections of my late brother are of the time when he was a scholar at the boarding-school of Mr. H. Screaton, at Billesdon, a large village about nine miles from Leicester. This was at that time considered one of the best schools in the county. I well recall to mind how we (brother John and myself) used to look forward to the time when the holidays would bring him once more amongst us; for even in those early days we looked upon him as our dear "guide, philosopher, and friend" and not without good reason, for he ever sought to lead us, in his kindly, genial way, to better and higher thoughts and deeds.

At this school he finished what may be called his scholastic education; and in those days the education of tradesmen's sons did not extend beyond the age of thirteen or fourteen years. He was afterwards apprenticed to Alderman Gregory, hosiery manufacturer, of Halford Street, Leicester. Those were "hard times," for his working hours were from 7 a.m. to 8 p.m. Many a time in his earlier apprenticeship days have I accompanied him to open the warehouse, and helped him to "sweep up":

my reward being the string and waste that were on the floors of the warehouse, which were always the perquisite of the apprentice. It was during this apprenticeship that my brother laid the foundation of all that he afterwards became.

Fortunately, at this period we had in Leicester an institution called the Mechanics' Institute, which possessed a good library, and had numerous evening classes, with competent masters. Under the liberal and enlightened management of such men as Mr. Riley and Mr. J. F. Hollings, this rapidly developed into a large and magnificent educational institution. My brother became a member, entered the Greek, Latin, French, Drawing, and Composition classes, and worked with an energy and perseverance that soon brought him to the front in all. In public assembly, he received at the hands of the president, Mr. Riley, the first prizes for Greek and Latin, was second only in French and Composition (essay writing), and was no mean draughtsman. German he learnt while abroad. His capacity for work at this time was prodigious. As I have stated, his business hours were from 7 a.m. to 8 p.m., and yet he was enabled by his indomitable will and energy to master all the subjects named in the very limited time left at his disposal. It was no uncommon thing for him to work till midnight and yet be up and at work again at 4 a.m. Often used he to awaken me in the early morning to "hear" him his lessons in the Greek or Latin grammar, and when he was translating Homer, he set himself to translate so many lines before going to the warehouse (at 7 a.m.); if he could not accomplish this by rising at 4 a.m. he would begin at 3 a.m., for the *task must be done*.

His enthusiasm for his work was unbounded: as witness he had written on the fly-leaf of his Latin grammar:—

"I am as fond of Latin
As women are of satin."

During all this period he was a great reader. I remember his saying that no one ought to make any pretensions to be considered a reader who had not twice gone through Gibbon's 'Decline and Fall of the Roman Empire. He also devoted some time to music (of which he was always exceedingly fond). He became a member of a glee club, and learned to play the guitar. Having a fair baritone voice he used to accompany his songs on that instrument.

It was whilst attending the classes before mentioned that he formed the acquaintance of certain gentlemen (notably Mr. John Plant, now and for many years past the curator of the Salford Museum, his brother James Plant, now practical geologist of Leicester, and the late Mr. James Harley, ornithologist) with strong tastes for the pursuit of natural history. I have no recollection of his specially pursuing any other branch than entomology; although I well remember he could give you the names of all the wild flowers that were met with in our rambles. Like most collectors he commenced with the Lepidoptera, but soon abandoned these for the Coleoptera. Of course I was soon enlisted as one of his collectors, and all the fine Saturdays of my schoolboy days found me scouring the lanes and woods of Charnwood Forest in the pursuit of butterflies. Never shall I forget his radiant joy when I returned one Saturday evening with a pair of the "White C" butterfly (*Grapta C album*); nor when he once came bounding in, shouting in exultation, with his first capture of a "Tiger" beetle (*Cicindela campestris*), made in Ansty Lane.

We were living at this time in Queen Street, in a house built by our father, and a small room was apportioned to my brother as a "study." What happy hours have we spent therein, in those early entomological days when all to us was new and strange and wonderful and beautiful! Even now, after the lapse of fifty years, my heart swells with emotion at the remembrance.

Our earliest collections, I well remember, were stored away in such places as table and wash-hand stand drawers. Our collecting nets too were very primitive—a hoop of wire soldered into a tin socket to hold a stick. This was carried on an expedition for convenience under our coat-backs. Frequently were we laughed at by the passing villager who would ask us if we had stolen a plate and hid it up our backs. In those days the best collecting grounds were the parts of Charnwood Forest owned by the old Earl of Stamford, who did not strictly preserve for game. Consequently we had easy access to all the rich woods and places where insects most abounded. For my brother business working hours were many, but holidays were few. Good Friday was always chosen as the first grand opening day of the season. With what keen anxiety would my brother watch for propitious weather on that day! I can still see the happy group starting on one of those mornings, full of glee and joyous spirits. My brother used habitually to write a descriptive account of all these expeditions; he would also sketch and write out descriptions of all the principal insects captured. It was no doubt this habit that contributed largely to his after facility in descriptions, which was remarkable.

The old alderman to whom my brother was apprenticed died several years before the expiration of the term of apprenticeship. He then managed the business (on a smaller scale) for the alderman's son (who was not at all a business man), but this did not last long. By this time he had formed a very extensive collection of British beetles and was in correspondence with all the chief coleopterists of the time. The study of the Coleoptera was a very different thing in those days to what it is at the present time. Then there was nothing much to enable the worker to determine his species but Stephens's 'Manual,' and all who have puzzled over that book will know the difficulties. Now there are any number of good descriptive works, both British and foreign. I think the first contribution my brother made to entomological literature was a short paper entitled 'Note on Coleopterous Insects frequenting Damp Places,' which was published in the first number of the 'Zoologist,' and was dated Queen Street, January 3, 1843. Among the friends made about this time was Mr. E. Brown, of Burton-on-Trent, who interested himself in procuring my brother a situation as clerk in Messrs. Allsopp's offices at Burton-on-Trent. He remained there until he had made arrangements to start on his memorable expedition, in company with Mr. A. R. Wallace, to the Amazons. The post at Allsopp's was never congenial to him; he fretted under it.

At this time, and for long before, my brother was not in good health; his circulation was bad: his body had to be rubbed with coarse flesh-gloves, &c.—to undergo a sort of "massage" in fact—and his face was disfigured with spots. I can see him now brewing decoctions of Peruvian bark to take as a remedy. It was thought by his medical adviser that the journey to the Amazons might possibly be beneficial, and it was this which alone reconciled his mother (then in failing health) to his going. There is no doubt that the terrible overwork he had voluntarily undergone had injured him. His digestion was never good; in this he but shared in the lot of all his three brothers.

And now the brave, bright spirit has gone, and mortal eyes shall look upon his face no more—the good and loving brother, the firm and faithful friend, the gentle, courteous, genial, unassuming gentleman, scorning all pretence, hating all forms of cant and humbug, void of all worldly ambition that did not well become a man, reticent as to all honours that were conferred upon him. His brothers never knew from himself of any of these, and the order he received from the late Emperor of Brazil has never been seen by us, nor did he ever mention it in our presence. I need say no more.

Although zoology was the primary object of the expedition to the Amazons, much geographical and ethnological information was acquired. Bates and Wallace arrived at Para on the 26th April, 1848, and Bates resided there nearly a year and a half altogether, making it his headquarters, from which he started on short excursions into the interior, returning to refit and despatch his collections to England. At Para he virtually remained until the 6th of November, 1851, when he started on his long voyage to the Tapajos and the Upper Amazons, which occupied a period of seven years and a half.

It was from Para that the two travellers made an excursion down the river Tocantins and visited the town of Cametá. Nothing can excel the interest to be found in this great river highway, with these numerous tributary streams, and we obtain throughout the narrative of the expedition descriptive paragraphs, which bring the scenes vividly to our minds, and afford us much information on the complicated river geography. In September 1849, Bates started on his first voyage up the Amazons, in a small sailing vessel (for steamers were not established until the year 1853) and reached Santarem, which he subsequently made his head-quarters for a period of three years, but on this journey he pushed on to Obydos, about 50 miles further on. Here a trader was found who was proceeding in a cuberta laden with merchandise to the Rio Negro, which was arranged to frequently stop on the road, and Bates securing a passage once more increased his knowledge of the Amazons. The destination of the boat was Manaos, or the Barra of the Rio Negro, a spot rendered memorable by the visit of Spix and Martius in 1820. After a short stay Bates proceeded to Ega, the first town of any importance on the Solimoens river, which he reached on the 26th March, 1850. Here he spent nearly twelve months before returning to Para, and thus finished what may be considered as his preliminary survey of the vast collecting ground to be almost called his own.

In November 1851, he again arrived at Santarem on a second journey, where, after a residence of six months, he commenced arrangements for an excursion up the little-known Tapajos river, which in magnitude stands sixth amongst the tributaries of the Amazons. A stay was made at the small settlement of Aveyros, and from this spot an expedition was made up the Cupari, a branch river which enters the Tapajos about eight miles above it. At this time Bates was thrown in contact with the Mundurucús Indians and was able to acquire much valuable ethnological information. It was also during this second journey that the long stay was made at Ega, and the many excursions in its neighbourhood resulted in so much general knowledge, both zoological and geographical. Bates returned again to Para on the 17th March, 1859, after an interval of seven and a half years in the interior, a wreck of his former self. No constitution could withstand the continued strain of climate, poor living—frequently actual hunger—and exposure which the real naturalist so long endured,

and we may rest assured that nothing but physical prostration actually brought about the long deferred return to England and this abandonment of the anticipated visit westward "to gather the yet unseen treasures of the marvellous countries lying between Tabatinga and the slopes of the Andes."

After all, our ideals are dominated by our physical capacities; successful exploration is not for the enthusiast who possesses a weak constitution, and even the zoological furor of a Bates was at last conquered by the effects of privations that few could have withstood so well, but which rendered him almost an invalid for the remainder of his days.

The following letter addressed to the Foreign Secretary of the Society by Baron de Santa Anna Nery, Honorary Corresponding Member of the Society, shows that even yet the name of Bates is remembered in the Amazons.

Paris, le 8 mars, 66 Rue Mozart.

My Lord,—On my arrival from Brazil, where I have been passing the last five months, I learn from the 'Proceedings of the Royal Geographical Society' the sad news of Mr. Bates's death. I feel the greatest grief for his loss, and I wish that not only his family, but also our Society, should rest assured that in all Brazil, and especially in the Amazons, his death will be deeply felt. Native of that vast and far off province, as a child I learnt to admire the author of the 'Naturalist on the Amazons.' Mr. H. W. Bates was one of the first to foretell the splendid future of the Amazonian Valley, and to describe its bewildering splendours. Although his voyage to the Amazons was undertaken in his early manhood, time has not been able to efface his memory, and many an inhabitant of our regions still retains a vivid remembrance of the English naturalist. In 1889 I was fortunate enough to make his acquaintance, and great was my pleasure to find that he also remembered with delight his bold and perilous excursions in our forests, and recalled readily to mind episodes of that period of his life. On that occasion Mr. Bates offered me his portrait. I am convinced that the two Provinces of Pará and the Amazons will make it a point of honour to place in their Congress halls a large sized reproduction of this photograph, as a homage due alike to a modest *savant* and to English science.

In conclusion, may I ask your Lordship to be the interpreter of my sentiments on this occasion, towards our Society and the family of the illustrious deceased.—I have the honour to remain, my Lord, your Lordship's obedient servant, BARON DE SANTA ANNA NERY, Honorary Corresponding Member of the Royal Geographical Society.

Sir Joseph D. Hooker, K.C.S.I., C.B., F.R.S., sends the following interesting reminiscences of his intercourse with Bates immediately after the latter had returned from the Amazons:—

I first had the pleasure of seeing him—and to see him was to know him, for a more translucent character I never encountered—at Mr. Darwin's at Down, very shortly after his return from the Amazons. We there spent several days together, and I can remember none more enjoyable. There was such a fascination in his manner and character, and such a boyish hearty enjoyment of his return to his native country and all that it contained from Shakespeare to Punch, and from Darwin to the merest bug-hunter (so long as the work was honest). Darwin's

appreciation of him was whole-hearted and all-round, and Bates's first visit to Down was marked with a white stone in his host's memory, as in mine, and often recurred to by us. I have over and over again compared and contrasted these two friends, and always, if I may be so presumptuous as to record it, to the advantage of both.

The following contribution by Mr. W. L. Distant, an old friend of Mr. Bates, and himself a well-known entomologist, will afford some idea of the work accomplished by our late Secretary in natural history, and especially in entomology.

In a biological epoch to be known hereafter as the Darwinian era, the name of my late friend Mr. H. W. Bates is indissolubly connected with that early band of disciples associated with the great expounder of the law of evolution by natural selection. Darwin was himself an entomologist, but specialism could find no place in the encyclopedic attention he paid to all branches of biological knowledge. To Bates belongs the honour of considerably advancing entomology on a philosophical basis, and it is to his entomological work and his influence on the progress of entomology that these lines are proposed to bear witness.

In entomology, as in most other biological sciences, there are usually three distinct kinds of workers: the collectors or field naturalists, the philosophical observers or recorders of evolutionary facts and arguments, and those who devote themselves to the systematic classification of the Insecta. These branches are seldom followed by the same worker; the methods to be pursued are so different, the tastes inspiring each so varied, whilst the pursuit of one frequently leads to a disparaging view being held of the others. Bates almost uniquely proved himself a master in each, and with the exception of his old travelling companion Wallace, is approached in that respect by scarcely another living entomologist. It was an eventful time when the two naturalists sailed for Para. The vast collections of insects now existing in public and private museums, and which can be so readily consulted, were then of much smaller dimensions. It was the age of the iconographer of remarkable forms, the material for the exhaustive monograph being still unobtained. All reasonable attempts to understand the geographical distribution of animals awaited faunistic catalogues, which in a complete form were impossibilities. Whole tracts of the world, if not geographical expressions, were zoologically unknown. The few travelling naturalists of those days had scarcely been trained to combine the collection of a specimen with the observation of a fact. When Bates started, Darwin's 'Voyage round the World,' following Humboldt's 'Personal Narrative,' must have excited the keenest interest in philosophical biology; naturalists seemed almost to revive as from a sleep, and nature's methods were beginning to be studied as well as her objects. The 'Origin of Species' had still to appear, and Bates accepted a self-imposed commission to unravel the natural history of the Amazons.

During the eleven years that he passed collecting in this glorious though somewhat unhealthy region, communications from his pen appeared from time to time in the 'Zoologist,' and we can form an idea of the assiduity with which this work was carried on. In one of these letters we have a personal account of his own equipment in the neighbourhood of Ega:—"Between 9 and 10 a.m. I prepare for the woods: a coloured shirt, pair of trousers, pair of common boots, and an old hat, are all my clothing; over my left shoulder slings my double-barrelled gun, loaded, one with No. 10, one with No. 4 shot. In my right hand I take my net; on my left side is suspended a leathern bag with two pockets, one for my insect-box, the other for powder and two sorts of shot; on my right side hangs my "game bag," an orna-

mental affair, with red leather trappings and thongs to hang lizards, snakes, frogs, or large birds; one small pocket in this bag contains my caps, another papers for wrapping up the delicate birds; others for wads, cotton, box of powdered plaister, and a box with damped cork for the Micro-Lepidoptera; to my shirt is pinned my pin-cushion, with six sizes of pins."

Of the vast quantities of specimens thus collected we obtain occasional glimpses as when writing to his agent, Mr. Samuel Stevens, of his five months' trip to St. Paulo, he states that he altogether brought 5000 specimens of insects from there: "Amongst which there were 686 species new to me of all orders, 79 being new species of Diurnal Lepidoptera." But insects did not altogether monopolise his attention, as we find him at Santarem "very anxious to hear of the safe arrival and profitable sale of the barrel of fishes, &c.," a branch of zoology in which he did not apparently receive the warmest support, as after stating what could be done in those streams where there "are *thousands* of species," he adds, "I only want encouragement." * His first communication to the 'Zoologist,' in 1852, was an excellent account of the Douroucoul monkey (*Aötes trivirgatus* Humb.), and his second paper of the same year concludes with a remark on the fertility of the lands of the Upper Amazons—"In the hands of the Anglo-Saxons, at some future day, what a wealthy country it may become!" This view he again expressed to the writer only two months ago; forty years had not altered his opinion, though the movement is still deferred. The collections thus formed were unrivalled, and one can still hear echoes from the small circle of contemporary naturalists—now alas! so small—of the intense interest with which Bates's consignments were anticipated. The banks of the great river were at last telling the tale of their inhabitants to the zoologists of Europe, for the collections were widely circulated, and long before the publication of the 'Naturalist on the Amazons' the name of Bates was indelibly connected with the region of his long sojourn. Not only did the expedition effect a history of the natural treasures of this interesting zoological province, but it also stimulated the zeal of many private and wealthy collectors, who subsequently promoted and assisted other zoological enterprises.

Had Mr. Wallace not visited the Amazons, he might have never made his memorable journey through the Malayan Archipelago. These eleven years with tropical nature bore fruit on all sides, and the observations and reflections made on the banks of the mighty stream created the philosophical work which succeeded the collecting epoch.

Of his 'Naturalist on the Amazons' there is little to be said, for the book is universally read, no naturalist's library is without it, and it will go down to posterity between Darwin's 'Naturalist's Voyage,' and Wallace's 'Malayan Archipelago.' Bates has often told the writer of Mr. Darwin's advice before he commenced the work: "Write the book carefully and then go over it again, crossing out every sentence that looks like particularly fine composition." One cannot read many pages without noticing the echo of Darwin's "Natural Selection" only published a few years previously. Butterflies are no longer the simple ornaments of a collector's cabinet, or an illustration of the teleologist, but on their wings the author sees that "nature writes, as on a tablet, the story of the modification of species, so truly do all changes of the organisation register themselves thereon." This remark obtains confirmation from his celebrated memoir which had been recently published

* In the preface to his 'Naturalist on the Amazons,' he has given an approximate enumeration of the total number of species in all orders collected during the expedition as 14,712; and these received the attention of the late Dr. Gray, Dr. P. L. Slater, Dr. A. Günther, Dr. Bowerbank, and numerous capable entomologists.

by the Linnean Society, entitled 'Contributions to an Insect Fauna of the Amazon Valley,' but which really gave to the scientific world the phenomenon of Mimicry and its philosophical explanation. It is needless to re-state the now well-known facts of some inedible butterflies being mimicked in appearance by other species to which they had no close relationship; the protection thus acquired by the mimickers, and the brilliant hypothesis—if such it can still be called—of the process being due to a course of natural selection. It was seen at once to possess the merit of a true scientific discovery, for it gave the explanation to more facts than those advanced by its author. It received the immediate and unconditional imprimatur of Mr. Darwin. At Cape Town Mr. R. Trimen applied the doctrine to some South African species, whose mimetic resemblances had hitherto been simply a wonder or a curiosity, but which were thus seen to be due to the same natural causes.

Mimicry is now an established element in Darwinism, and like its parent source has still a very few sceptics among the old school of naturalists and a few too adventurous supporters. The enunciation of the phenomenon of mimicry has had an immense effect on entomology. Natural selection as an evolutionary process was held by many entomologists as a creed, but seldom used in attempts to solve the numerous problems of the insect world. "Mimicry" came forward as a distinct challenge, it affirmed the teachings of Darwin, and afforded a new application of the law he enunciated. What the ultimate extension of the theory may disclose one cannot foretell; whether some portions of its extreme application altogether met the views of its author has never been publicly stated, but it is possible and probable that the enthusiastic investigations now being made to enlarge the area of its domination may disclose other processes of the law of natural selection, besides the undoubted fact of mimicry. In that event the philosophical influence on entomology already exercised by Mr. Bates will be enhanced.

In 1864, Mr. Bates contributed to the 'Journal of Entomology' an important paper on the classification of the Rhopalocera or Butterflies, which was an enlargement and elaboration of similar views which he had published three years previously. In entomology as in most other branches of zoology, systematic classifications are often unavoidable but convenient modes of arrangement for a monographer rather than the elucidation of a natural system on evolutionary principles, though the beauty of a classification is shown when based on those characters which exhibit a progressive modification in structure, or in other words exhibits the evolution from a simple to a more specialised type. The epoch-making character of the arrangement proposed by Mr. Bates is best proved by the fact that it has since been universally followed, and this in recent years when a large number of faunistic works on the Rhopalocera have been written in various lands and with a wealth of material formerly unknown. This classification reversed the previously understood sequence in the families, and still remains the most philosophical and natural system yet attained in the arrangement of any order of the Insecta. This paper is a model of the philosophical treatment of a purely systematic subject.

As a systematic and descriptive writer Mr. Bates has been a constant contributor to entomological literature for the last thirty years. On his return from Brazil he published several papers on his Rhopalocerous collections, and contributed a Memoir to the Linnean Society on the Phasmidæ, a group of Orthopterous insects. But in Coleoptera he was a great authority, certainly the greatest in the Geodephagous section of the order. His collection of these beetles is probably the finest in the world, and undoubtedly the best worked out. If any one sought the names of small and obscure Carabidæ, the advice was always, "You must go to Bates," and it is not beyond the truth to say that he had corresponded with every contemporary coleopterist. His greatest systematic publication will be found in the three volumes he

contributed to the 'Biologia Centrali-Americana,' and in the initial arrangements of that vast undertaking his advice was greatly valued.

As a collector or field naturalist, a philosophical observer or a systematic writer, Mr. Bates has equally filled a commanding position in the science he loved so well, and with this rare combination of endowments it may be claimed for his memory that he was probably the greatest and certainly the most respected entomologist of his time. His advice was always sought and freely given, and few entomologists visited London without taking an opportunity to meet him.

Thus a friend has passed away who had the rare privilege of being equally loved as a man and honoured as a naturalist.

Mr. Edward Clodd, author of 'The Childhood of the World,' 'The Story of Creation,' &c., writes as follows on some of the more general aspects of Mr. Bates's character. Mr. Clodd was for several years Mr. Bates's near neighbour and intimate friend.

While the signal and original services of Mr. Bates to natural history, both in the collection and, what is of greater importance, the interpretation of materials, are the chief credentials of his title to a place among the *savants* who have supplemented and strengthened the theory of natural selection, there are other sides of his character on which they who valued this greater and more prominent work of his life will also love to dwell.

To the few who knew him outside official duties; the congenial company that gathered at the Kosmos Club or at the gossipy luncheon-table, the "polygonal" or many-sided aspects of his mind, with its inclusion of all human interests and sympathies, were the striking features of his unassertive individuality. But, perhaps, to know him at his best, and pierce the thick husk of his modesty, was when, the evening employment of beetle-sticking over, and the frugal supper eaten, the pipe was lit and talk started, sometimes on some topic of the day, but, more often, on some subject suggested by his wide and varied reading. For, unlike Darwin, who tells us in the autobiography which is prefixed to his 'Life and Letters,' that for many years he "could not endure a line of poetry and found Shakespeare intolerably dull," even music disconcerting him and natural scenery giving him little delight, Bates revelled and rejoiced in all these ministers to the completeness of life. In fact, he was far the richer of the two both in mental grasp and equipment, and such letters of Darwin to him as have survived evidence that Bates's masterly suggestiveness impressed him profoundly. Darwin also tells us that the fiction which interested him was not of a high order. By contrast, Bates's chief favourites were Thackeray and Thomas Hardy; he loved the one for the pathos and insight which the shallow folk who call Thackeray cynical cannot see underlying the seemingly cold analysis of act and motive; he loved the other for the sweet country air that blows through every page. He loathed the modern school of didactic and introspective fiction.

The love of Homer, which his brother, in the very interesting notes of his boyhood, tells us he learned to read in hours stolen from sleep before sweeping out the warehouse, never cooled; he preferred the Ionian hexameters to the paraphrase of Pope or the prose of Myers and Lang. Milton and his more immediate successors were favourite authors, but when Matthew Arnold's poetry was brought under his notice, he felt as Keats felt when first reading Chapman's Homer, "a new planet swam into his ken." Its classical note, its severity of restraint, its saneness and surefootedness, its gospel of cheerful acceptance of the inevitable, led him to give Arnold the chief place in his assessment of modern poets.

The remarks which his brother quotes about Gibbon have an added interest, because Bates had been steadily re-reading that immortal book for months past, and

had reached the middle of the last volume when he died. He became quite "the old man eloquent" in following the great historian in his stately march through the most pregnant ages of the world's history, dwelling especially on the bloody struggles between the factions of Christendom and the Arabian conquests and influence. But Dean Milman's notes irritated him; he thought them, for the most part, an impertinence.

Considering how full his days were with office routine, and how his spare time was trenched upon in the editing of this Journal, it is surprising how well he kept himself abreast of the latest science. Doubtless, in this, his early business training had given him the secret of method. Therefore little escaped him. Acquaintance with the new evidence in support of the European origin of the Aryan race; with the arguments of Weismann in his 'Essays on Heredity'; with the less lucid exposition of the theory of Physiological Selection by Prof. Romanes, followed in quick succession. Weismann's book exercised him keenly; his verdict on it was "not proven," and he inclined to that verdict being upheld. Romanes's paper partly repelled him by its obscurity of style, but chiefly as reversing the method of the master whose theory it professed to supplement, in too hurried publication of a theory which only long and patient observation of a wide group of facts can support or controvert.

This general interest in various branches of knowledge evidences how Bates had escaped from the limitations which hem in the mere specialist; so that, however impaired his bodily vigour, there was no trace of mental ossification; rather of unwearying powers of receptivity. There was a wonderful freshness in all that he said, and a wonderful charm in the way he said it. His sentences were broken by curious hyphen-like pauses. But how perfect they were in construction; clear-cut, pure English, so that, taken down (alas! that they were not taken down) not a word need have been altered or transposed. Never did the listener leave without taking away some fruitful idea; some fresh aspect of familiar matter, evidencing the power of the speaker in seizing upon the relation of a particular fact or theory to the totality of knowledge.

But, even more than the gentle voice, the winning smile, and the affectionate greeting, the friends of Bates will cherish as the chief lesson of his life, especially in an age of "Sturm und Drang," of pushing to the fore, of clamour for priority of discovery, the wholesomeness of possessing the soul in patience, and of work done in quiet, finding alike impulse and contentment in the thought that so far as the work is sterling and contributory, "natural selection" will take care of it.

Mr. Clements R. Markham, C.B., F.R.S., who became Honorary Secretary of the Society in 1863 (the year before Mr. Bates was appointed Assistant Secretary), and filled the office for twenty-five years, contributes the following reminiscences of the colleague with whom he was so long and so intimately associated:—

It would be difficult to estimate the benefits that the Society has derived from the services of Mr. Bates since he became its Assistant Secretary in 1864, because they made themselves felt in so many directions and in so many ways. During the six years of his service, when the Society's premises were in Whitehall Place, and the Presidency was held by Sir Roderick Murchison, his active assistance was directed to the improvement of the organisation in the Office, Library, and Map Room; to the development of a better system of keeping and presenting the accounts; and to a more popular and more agreeable plan in the preparation of papers to be read at the meetings. By the able and judicious way in which these improvements were conceived and persevered in, Mr. Bates very early showed how admirably he was

fitted for the place, and both Sir Roderick and the Secretaries relied more and more upon him as their main stay and support in the work of maintaining and advancing the efficiency and prosperity of the Society. Mr. Bates's usefulness was, perhaps, most felt in the assistance and advice he gave to travellers, and, indeed, to every one who came to him on geographical business. They invariably found in him not only a man ready to impart information and advice, but a trustworthy and sympathising friend. It was, however, in times of difficulty and on occasions needing the exercise of tact and conciliation that Mr. Bates's valuable qualities made themselves most felt by his colleagues. There was such a combination of circumstances at the meeting of the British Association at Bath in 1864, when great pressure of work was ably met, arrangements exactly suited to the needs of the moment were made, and conflicting interests were reconciled, quietly, smoothly, and with admirable judgment. Indeed, the Geographical Section of the British Association has owed its success and efficiency in a great measure to Mr. Bates during the many years that he has acted as one of its Secretaries.

The removal of the Society's premises, in 1870, from Whitehall Place to 1, Savile Row, was another occasion when his organising and administrative abilities were specially displayed, and all who assisted in the difficult and arduous work of moving were deeply impressed by them. It was, in one way, a sad time, because the President, to whom the Society owed so much, had been struck down by paralysis. He was never able to enter the new building, but he drove to the door and looked in from his carriage, while Mr. Bates explained all the arrangements in detail. It was a few days after this melancholy visit that Sir Roderick expressed his high sense of Mr. Bates's services, and his gratitude for the efficient help he had always received from him.

During more than twenty years since the removal, Mr. Bates has rendered the same services, and each successive President has endorsed the feelings expressed by Sir Roderick Murchison. If the admiration of his friends and colleagues could have been increased in any way, after a long experience of his high qualifications and of his goodness of heart, it would have been by the conscientious way in which he invariably stuck to his work, and refused to allow himself any relaxation, in spite of delicate health and the urgent need for rest which he must have felt. In the work of editing the Society's Transactions, which devolved upon Mr. Bates from the period of his first appointment, he was unwearied and most successful in obtaining information bearing on geographical work from every quarter and from all parts of the world; he supplied invaluable hints and suggestions to the authors of papers, and he smoothed over difficulties with never-failing tact. His own rich stores of information were invaluable to all who needed help in their work, and over and over again they enabled him to supply a missing clue in some difficult inquiry, or to elucidate and piece together isolated facts, and show their bearings on each other. In all their intercourse with him, his colleagues, as well as the general body of geographers and travellers, have always been as much impressed by his ability and knowledge, and by the soundness of his judgment, as by that sympathising and kindhearted way of giving his opinion or advice which endeared the late Assistant Secretary to all who came in contact with him. After an acquaintance extending over close upon thirty years, the present writer is glad to have an opportunity of recording these recollections of his lost friend.

Mr. Francis Galton, F.R.S., who had known Bates from the time he became connected with the Society, writes as follows about his late friend:—

If reiteration left a deeper impression than a single clear statement, I would

repeat what other biographers of Mr. Bates have already expressed, as to the singular and valuable services he rendered to the Geographical Society, and to the furtherance of geography in England. I would also have willingly dwelt on the thoroughness of all his work, on his kindly appreciation of the merits of others, on the sympathy which gave a singular charm to his relations with young travellers, to his modesty, combined as it was with good sense, well-considered judgment, and with firmness. On these points which have been justly emphasised by others, I abstain for that reason alone from saying more, and shall endeavour only to supplement their remarks by a few recollections that seem worth putting on record. I had taken an active part in the affairs of this Society many years before the appointment of Mr. Bates, and can remember well how important it had become to us to have an orderly and efficient Secretary, and how difficult it was to find what we wanted. At this juncture the strong recommendation of Mr. Murray, the publisher, was the fortunate circumstance that determined the election of Mr. Bates, of whose merits otherwise than as an enterprising traveller, as a naturalist of high distinction, and as a charming writer, most of us on the Council were ignorant. Mr. Murray assured us in addition to all this, of Mr. Bates' methodical and orderly ways and of his business-like habits, without which the other qualifications, high and rare as they are, would not have sufficed to make a good secretary.

It is to be regretted now that the services of a man who did such admirable geographical work, both in the field and at his writing-table, were not conspicuously recognised during his lifetime by our Society. It is to be presumed there was a feeling that the most appropriate time for doing so would arrive when advancing years should induce him to seek repose in an honoured retirement; but death has now intervened. His merits were thoroughly appreciated by all those for whose good opinion he was likely to care. I may be permitted to mention that I was requested by the Council of the British Association on one occasion, to strongly urge his acceptance of the Presidency of the Geographical Section. It was a post from which his retiring disposition evidently shrank; but he refused to accept it on the grounds of uncertain health, and a painful malady which was especially apt to harass him during the later summer months, and to interfere with continuous work. During my long acquaintance with Mr. Bates, and frequent consultations with him, I have found him from first to last the same. He was always a frank and helpful adviser, kindly natured in taking the best view of things, and perfectly upright and trustworthy. I am painfully conscious that I have lost in him a real friend.

In conclusion, one word may be permitted to the colleague and intimate friend for many years, who has had the honour of being appointed to Bates's vacant office. Bates's fellow-officials in the Society regarded him with unreserved admiration, affection, and respect. He, as their chief, invariably showed himself sensitively considerate of their feelings; while they in their turn shrank from doing anything which would give him trouble or vex his genial soul. It is not likely that the chair of the Assistant Secretary will ever be filled by his like again.

Of honours Bates received many; no one knows how many, for he never spoke of them. The only time the present writer ever saw the Order he received from the late Emperor of Brazil was at one of the Society's conversations; it was only by accident he got a glimpse of it concealed beneath the lapel of Bates's coat. He was made a Fellow of the Linnean Society

in 1871, and of the Royal Society, strange to say, only in 1881. Of the Entomological Society he was twice President. Bates was married in 1861. His wife survives him, as also do one daughter, who is married, and three sons, two of whom (the eldest and the youngest) are farmers in New Zealand, while the second son is an electrical engineer.

